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25. (Amended) Use of a protein according to claim 1, in diagnostics and therapy, in cosmetics, bioseparation and biosensors and reduction of harmful substances.

#### REMARKS

The amendments to the specification as set forth above are intended to clarify and set apart the various sections of the subject application.

The amendments to the claims as set forth above are intended to remove all multiple dependent claims from the subject application and to more particularly point out and distinctly claim the subject invention.

Attached hereto is a marked-up version of the specification and claims 1-17 and 19-25, which illustrates all of the changes made to the specification and claims pursuant to 37 CFR §1.121. The attached page is captioned "Version With Markings To Show Changes Made". Deleted language is bracketed and added language is underlined.

The Commissioner is hereby authorized to charge any deficiencies or credit any overpayments in connection with the filing of this correspondence to Deposit Account No. 50-0426.

Respectfully submitted,

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Date: 1-9-02

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Version With Markings To Show Changes MadeIN THE SPECIFICATION:

The paragraph heading has been inserted on page 1 of the English translation of the subject application, before the title, as follows:

Description

The paragraph heading has been inserted on page 1 of the English translation of the subject application, before the first full paragraph, as follows:

Technical Field

The paragraph heading has been inserted on page 1 of the English translation of the subject application, before the second full paragraph, as follows:

Background Art

The paragraph heading has been inserted on page 2 of the English translation of the subject application, before the first full paragraph, as follows:

Summary of the Invention

The paragraph heading has been inserted on page 14 of the English translation of the subject application, before the fourth full paragraph, as follows:

Brief Description of the Drawings

The paragraph heading has been inserted on page 16 of the English translation of the subject application, before the sixth full paragraph, as follows:

Detailed Description of the InventionIN THE CLAIMS:

The paragraph heading "Patent Claims" on page 1 of the English translation of the Amended Claims has been deleted and the paragraph heading has been inserted in place thereof as follows:

CLAIMS

The paragraph heading has been inserted on page 1 of the English translation of the Amended Claims, before claim 1, as follows:

What is claimed is:

1. (Amended) Protein with beta-sheet structure, [characterized in that] wherein amino acids exposed on the surface in at least two  $\beta$ -strands exposed on the surface of at least one beta sheet exposed on the surface are specifically substituted, deleted or inserted, such that the protein has new specific antigen binding properties or a new catalytic activity or new fluorescence properties.
2. (Amended) Protein according to Claim 1, [characterized in that] wherein it is included in the group consisting of crystallines, spherulines, heat shock proteins, cold shock proteins,  $\beta$ -helix proteins, lipocalins, serpins, fibronectins or transcription factors or is GFP, NGF, tendamistat or lysozyme.

3. (Amended) Protein according to Claim 1 [or 2, characterized in that], wherein, amino acids exposed on the surface in three beta strands exposed on the surface are substituted, deleted or inserted.

4. (Amended) Protein according to Claim 1 [or 2, characterized in that], wherein, amino acids exposed on the surface in four or more beta strands exposed on the surface are substituted, deleted or inserted.

5. (Amended) Protein according [one or more of the preceding claims, characterized in that] to claim 1, wherein amino acids exposed on the surface in at least two beta strands in at least two beta sheets are substituted, deleted or inserted.

6. (Amended) Protein according to [one or more of the preceding claims, characterized in that] claim 1, wherein, amino acids exposed on the surface in three beta strands in two antiparallel beta sheets are substituted, deleted or inserted.

7. (Amended) Protein according to [one or more of the preceding claims, characterized in that] claim 1, wherein it is a crystalline of vertebrates, preferably rodents, birds or fish.

8. (Amended) Protein according to [one or more of the preceding claims, characterized in that] claim 1, wherein, it is an alpha-, beta- or gamma-crystalline.

9. (Amended) Protein according to [one or more of the preceding claims, characterized in that] claim 1, wherein, it is a gamma-II-crystalline protein.

10. (Amended) Protein according to [one or more of the preceding claims, characterized in that] claim 1, wherein amino acids exposed on the surface of the protein are substituted, deleted or inserted in a region of the beta sheet accessible to a solvent or to a binding partner.

11. (Amended) Protein according to [one or more of the preceding claims, characterized in that] claim 1, wherein, amino acids exposed on the surface are substituted, deleted or inserted in a  $\beta$ -sheet structure of a domain or a subunit of the protein.

12. (Amended) Protein according to [one or more of the preceding claims, characterized in that] claim 1, wherein, it is a gamma-II-crystalline which has been obtained by substitution, deletion or insertion of one or more of the amino acids Lys 2, Thr 4, Tyr 6, Cys 15, Glu 17, Ser 19, Arg 36 and Asp 38 in gamma-II-crystalline.

13. (Amended) Protein according to [one or more of the preceding claims, characterized in that] claim 1, wherein, amino acids exposed on the surface of the protein have been substituted, deleted or inserted in the beta sheet such that it has antibody-like binding properties or an enzymic (catalytic) activity.

14. (Amended) Protein according to Claim 12 [or 13, characterized in that] wherein it has binding specificity for estradiol or the conjugate thereof, BSA- $\beta$ -estradiol-17-hemisuccinate.

15. (Amended) Protein according to [one or more of the preceding claims, characterized in that] claim 1, wherein, it has binding specificity for estradiol or the

conjugate thereof, BSA- $\beta$ -estradiol-17-hemisuccinate and has the amino acid sequence SEQ ID NO. 19 or SEQ ID NO. 21.

16. (Amended) Protein according to [one or more of the preceding claims, characterized in that] claim 1, wherein, it is combined with other proteins or non-protein substances.

17. (Amended) DNA coding for a protein according to [one or more of the preceding claims] claim 1.

19. (Amended) Prokaryotic or eukaryotic vectors or cells comprising a DNA or RNA according to Claim 17 [or 18] or parts thereof coding for functional regions of the protein.

20. (Amended) Method for preparing a protein according to [one or more of the preceding claims] claim 1, comprising the following steps:

- a. Mutagenesis of the DNA coding for a protein with beta-sheet structure in those regions which code for at least two beta strands, exposed on the surface, of a beta sheet exposed on the surface;
- b. Expression of the mutants obtained in step (a) in a suitable expression system; and
- c. Selection and isolation of mutants having the desired binding properties and/or the desired catalytic activity; optionally
- d. Expression and purification of the beta sheet-mutated proteins.

21. (Amended) Method according to Claim 20, [characterized in that] wherein the mutagenesis comprises a substitution, deletion or insertion of specific amino acid positions (site-specific mutagenesis) or non-specific amino acid positions (random mutagenesis) in the beta sheet.

22. (Amended) Method according to [one or more of the preceding claims, characterized in that] claim 20, wherein, the mutants in step b) are expressed in prokaryotic or eukaryotic cells, in a cell-free system as a complex with ribosomes or on the surface of plant or animal cells, yeast cells or phages, viruses or bacteria.

23. (Amended) Method according to [one or more of the preceding claims, characterized in that] claim 20, wherein mutants having the desired binding properties are selected by contacting these mutants with the binding partner and isolating those mutants having the desired binding affinity.

24. (Amended) Method according to [one or more of the preceding claims, characterized in that] claim 20, wherein mutants having the desired catalytic properties are selected by contacting these mutants with their substrate and isolating those mutants having the desired catalytic activity.

25. (Amended) Use of a protein according to [one or more of the preceding claims] claim 1 in diagnostics and therapy, in cosmetics, bioseparation and biosensors and reduction of harmful substances.